

Theme 4: Technology Transfer and Outreach

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Education and Outreach



NOAA's Educational Goals

- The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007.
 - From Title IV: In addition, NOAA is required to build upon existing educational programs and activities to enhance public awareness and understanding of the ocean, Great Lakes, and atmospheric science.



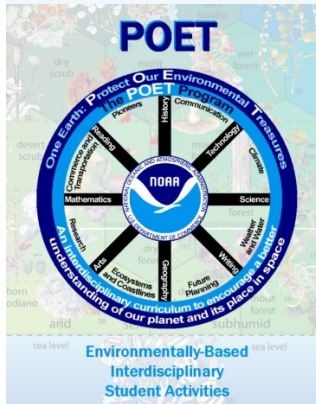


NOAA's Educational Goals

- From NOAA Educational Strategic Plan
 - Goal 1 – Environmental Literacy
 - Science On a Sphere®, Virtual Worlds, Protect Our Environmental Treasures, 8th Grade Science Day, Earth Day Open House, Take Your Child to Work Day*, School Field Trips, Public Tour
 - Goal 2 – Workforce Development
 - Interdisciplinary Scientific Environmental Technology*, Hollings Scholars, Educational Partnership Program



*See poster





Why Science On a Sphere®?





SOS Vocabulary

Topography Atmospheric Modeling **Sea Level Rise**
Earth at Night Chlorophyll
Aerosol Optical Thickness **GREENHOUSE GASES**
RADIANT FLUXES *Buoy Locations* OCEAN ACIDIFICATION
Earthquakes BATHYMETRY Global Warming
SATELLITE TRACKS Age of the Sea Floor Lightning
Global Carbon Output Tsunamis
CarbonTracker **Climate Change**
Real-time Weather *Solar Flares* *Ocean Circulation*
Sea Surface Temperature EL NINO *Arctic Sea Ice*
SEA SURFACE CURRENTS
TROPICAL CYCLONES Global Fires





Value of Science On a Sphere®?

- Creates exposure to Earth science, with an estimated annual visitorship of more than 14 million people
- Supports NOAA's goal to enhance environmental literacy and improve understanding, value, and use of weather and water information and services
- Displays NOAA's Earth science data in a way that engages audiences of all ages and builds public understanding of the scientific, technological, and environmental topics





Showcasing NOAA

“A big part of what I wanted for Science On a Sphere® is to show people what is happening on Earth. This is the most effective way to demonstrate the global crisis” – Dr. Alexander E. MacDonald in an interview for The Express in Washington DC

- Due to the flexibility and capability of SOS, scientifically relevant datasets are continually added and updated on the system
- This makes SOS the ideal tool for NOAA researchers to showcase NOAA's climate science
- SOS is a turnkey tech transfer which does not require ongoing effort of ESRL to maintain operations

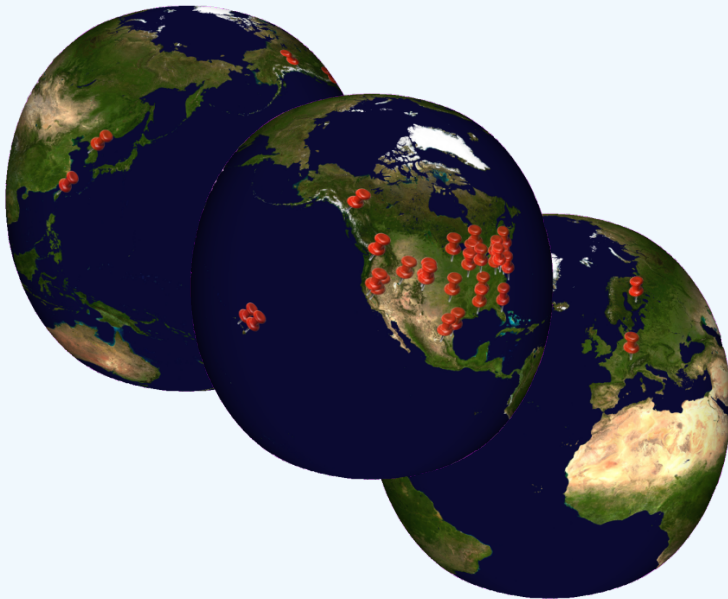


Dr. MacDonald, director of ESRL, points out the effects of rising temperature during a SOS presentation

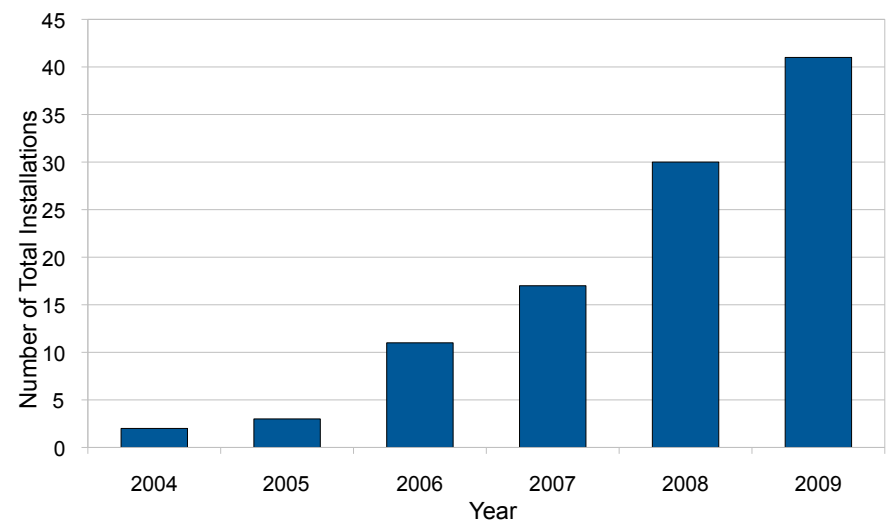


Science On a Sphere® Growth

- First public SOS installation in 2004
- Patented by NOAA is August 2005
- 41 permanent installations at the end of 2009
- SOS has been presented at the CA State Fair, AMS, G8, ASTC, NSTA, and COP15



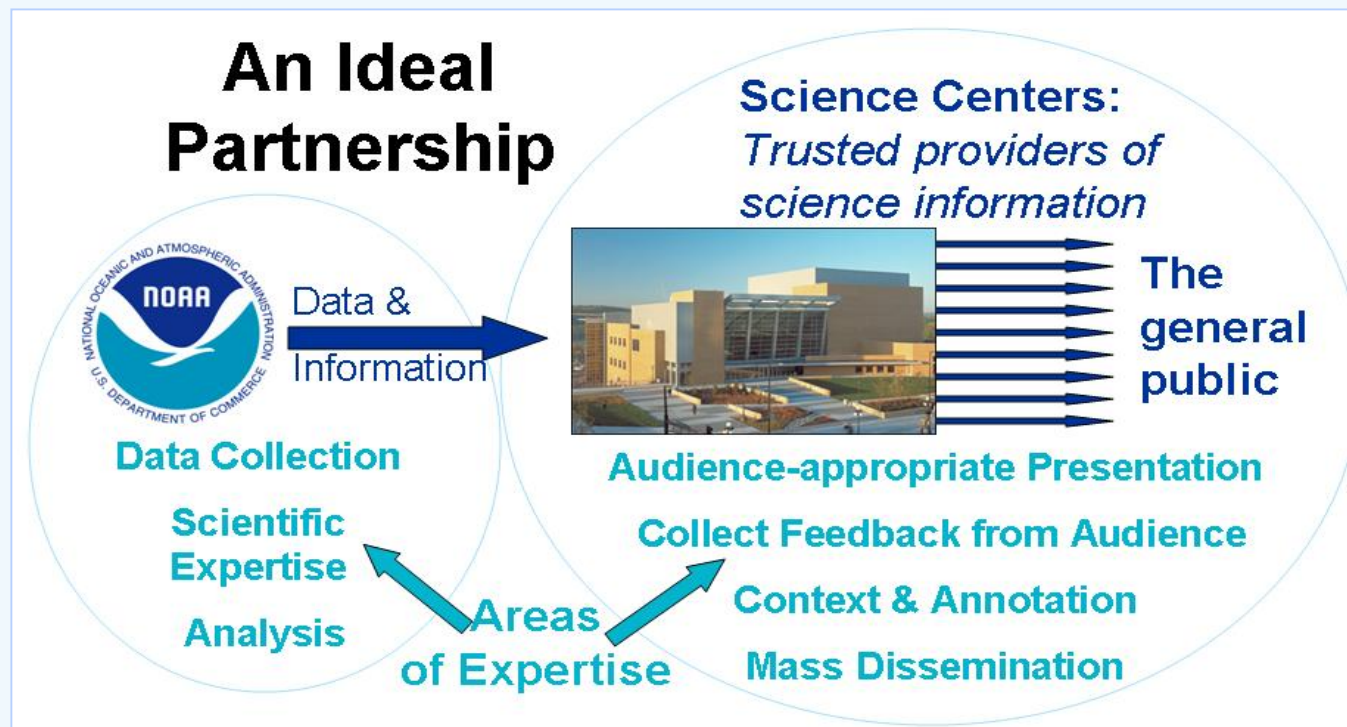
Cumulative SOS Installations





SOS Users Collaborative Network

- The SOS Users Collaborative Network was created by the NOAA Office of Education and is comprised of institutions that have SOS and groups that create content for SOS.





Data Catalog for Science On Sphere®

- Collaborations with many NOAA branches and outside scientific agencies
- A growing collection of more than 250 global data animations from:
 - NOAA
 - NASA
 - National Renewable Energy Laboratory, NREL
 - Universities, museums
- Data visualizations are publically available on a NOAA FTP server and used broadly outside of SOS:
 - Teachers, students, film producers, book editors, general public





SOS Impacts

"Would come back as often as possible. Wonderful learning experience."

"Simply the idea of it - never seen anything like it! I'm not even much of a science person - it's just very cool."

"...brought sense to all science classes learned in school and college."

"Brings science to life"

**Viewer Comments from the
Science On a Sphere®
Front-end Evaluation
Maryland Science Center
Baltimore, Maryland**

"Excellent, easily understood visuals."

"This is excellent material to understand the earth and Mars! I am not good at the science, but it's easy to understand for me! You should show all children in the world. Everyone loves it."

"The 3-D images on a sphere are unique and explain and show effects that cannot be seen in 2-D."